

Notes from the Field

THE WATERSHED FORESTRY PARTNERSHIP & RIPARIAN BUFFER WORKING GROUP NEWSLETTER

SPRING 2021

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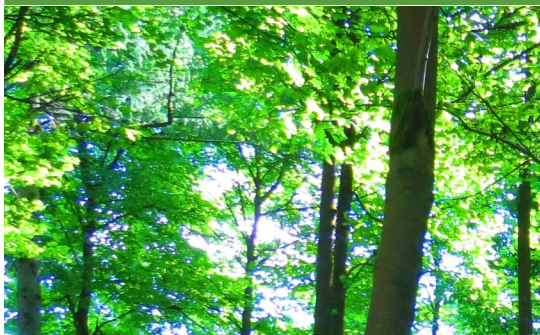
RESTORING WOODS AND WATERS AT THE LAPLATTE HEADWATERS TOWN FOREST

Ethan Tapper, Chittenden County Forester & Gus Goodwin, Senior Conservation Planner, TNC VT –

The LaPlatte Headwaters Town Forest (LHTF) is a 301-acre conserved municipal forest owned by the Town of Hinesburg since 2007. The LHTF protects the headwaters of the LaPlatte River, a wide, slow-flowing river that weaves through Hinesburg, Charlotte and Shelburne, eventually draining into Lake Champlain at Shelburne Bay.

Like Vermont's forests, the LaPlatte has been severely altered and degraded over the last several centuries. At the LHTF alone it has been ditched and straightened, its broad floodplains cleared, converted to hayfields and planted with the virulent non-native reed canary grass. And forests at the LHTF, while vibrant and beautiful, have struggled with a number of threats to their health and biodiversity.

Read about the restoration efforts at the LaPlatte Headwaters Town Forest on [pages 2-3!](#)

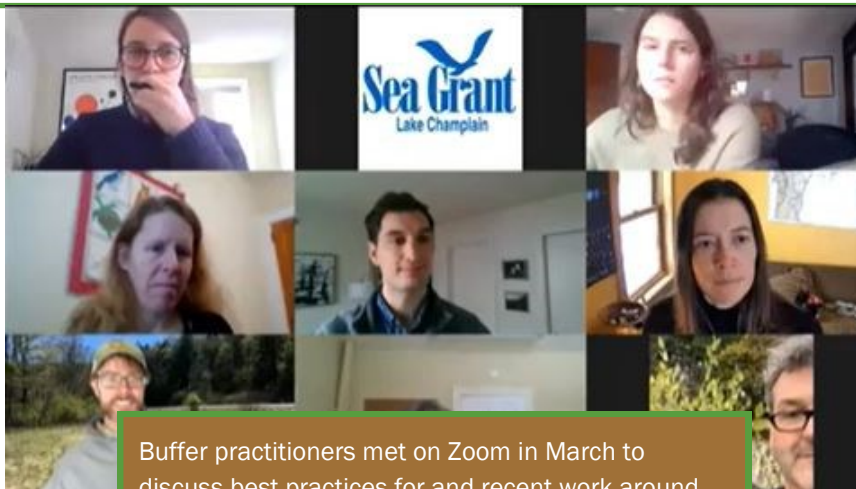


REPORTING BACK FROM THE 2021 VERMONT RIPARIAN BUFFER PRACTITIONERS' MEETING: VIRTUAL EDITION!

Alison Adams, Watershed Forestry Coordinator, UVM Extension

In early March more than 100 riparian buffer practitioners from across the state of Vermont met for a two-day virtual meeting to discuss best practices, new research, and recent work related to riparian forest restoration.

The meeting, organized by the Watershed Forestry Partnership with support from the Intervale Center and US Fish and Wildlife Service, was the third annual meeting of this group, which has grown from approximately 25 participants in its first year. Topics covered included updates from partners in the network; an overview of the rollout of Act 76 from DEC staff; managing buffers for wildlife including brook trout, wood turtles, and birds; recent innovations in restoration practices; and outreach tips, tricks, and new ideas from partners. The meeting sparked new ideas and collaborations including sharing outreach document templates, a potential future training on photo-visualization of riparian buffers, and a series of conversations to update and refine the available guidance documents for buffer planting projects.



Buffer practitioners met on Zoom in March to discuss best practices for and recent work around buffer restoration.

The Watershed Forestry Partnership has compiled all of the meeting materials, including the agenda and links to videos of each session, on the [meeting archive page](#).

We look forward to working with everyone over the next year, and convening—hopefully in person again!—for the next annual practitioners' meeting in spring 2022! ♦

**GUIDES FOR
BUFFER
PROJECTS**

LOOKING FOR TIPS, BEST PRACTICES, OR GUIDANCE ON PLANTING A RIPARIAN BUFFER?

The Stroud Water Center has released [this guide](#) to successful riparian buffer plantings. It's short and sweet (just two pages!) and provides a good summary of key considerations for planning, site prep, planting, and maintenance.

Additionally, the Watershed Forestry Partnership has compiled some go-to reference documents for riparian buffer plantings on our website. Check it out [here!](#)

NEED PLANTS?

The Champlain Native Plant Restoration Nursery, run by the Poultney Mettowee NRC, specializes in growing local native plant stock for conservation projects. CVNPRN has a variety of potted and bare-root stock available for sale and offers planting services to the southwestern region of Vermont.

Website: www.pmnrcd.org/champlain-valley-native-plant-restoration-nursery/

Email: sadie@pmnrcd.org

Phone: (802) 287-6606

Address: 685 York St. Poultney, VT 05764

RESTORING WOODS AND WATERS AT THE LAPLATTE HEADWATERS TOWN FOREST: INVASIVE CONTROL

Ethan Tapper, Chittenden County Forester

The LaPlatte Headwaters Town Forest (LHTF) is a 301-acre conserved municipal forest owned by the Town of Hinesburg since 2007. The LHTF protects the headwaters of the LaPlatte River, a wide, slow-flowing river that weaves through Hinesburg, Charlotte and Shelburne, eventually draining into Lake Champlain at Shelburne Bay.

Like Vermont's forests, the LaPlatte has been severely altered and degraded over the last several centuries. At the LHTF alone it has been ditched and straightened, its broad floodplains cleared, converted to hayfields and planted with the virulent non-native reed canary grass. The rich natural communities that once flanked it, providing unique habitat for huge numbers of native organisms and critical ecological processes, have been degraded or removed entirely. Throughout its meandering path through southern Chittenden County these patterns continue,

augmented by increasing residential and commercial development and its attendant pollution and run-off.

Of the LHTF's 301 acres, about 170 are forested. Like streams, forests are *dynamic*; to be healthy they need to be able to move and change. Like streams, forests are a volume of life, a community of organisms and natural processes far greater than just trees. Among the many, many other ways that forests support our lives and our quality of life, they have critical impacts on hydrology,

water quality and aquatic habitat.

Forests at the LHTF, while vibrant and beautiful, have struggled with a number of threats to their health and biodiversity. They were converted to fields in the early 1800's, probably maintained as such until the early

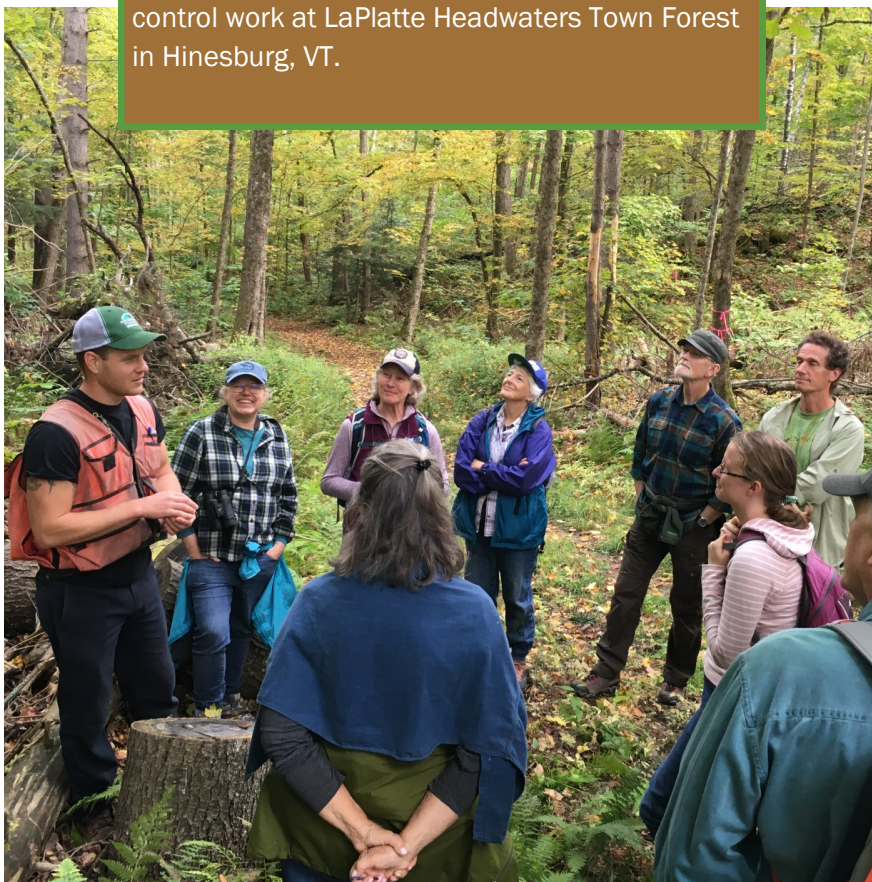
1900's (some areas were kept open until around the 1960's). As a result, most areas lack the complexity and

diversity that forests develop over time, which is synonymous with rich wildlife habitat, and the resilience and adaptability of forests in a changing climate. Additionally, the forests at the LHTF are compromised by dense populations invasive exotic plants (mostly shrub honeysuckle and common buckthorn) and a regionally high deer population. All of these factors threaten the overall health of forest ecosystems at the LHTF and their ability to grow and change over time. This in turn is a threat to all the important functions and services that

forests provide to our waters, including water quality and the critical habitats in and around our rivers, streams and lakes.

As a first step in addressing these threats, the Hinesburg Town Forest Committee moved to actively control invasive exotic plants at the LHTF with revenue generated from a demonstration forest management project at their other Town Forest, the 864-acre "Hinesburg Town Forest." (cont.)

Chittenden County Forester Ethan Tapper talks to community members about the invasive species control work at LaPlatte Headwaters Town Forest in Hinesburg, VT.



(cont. from pg. 2)

After two seasons of treatment, we have reduced invasive plant populations at the LHTF by at least 95%, to levels that can be maintained by mechanical means (hand-pulling) into the future.

This project has both local and regional importance. Locally, the work has helped forests at the LHTF be healthier, attenuating a major threat to their biodiversity, function and habitat. Regionally, the project is a shining example of a successful restoration project and a demonstration site for the thoughtful use of herbicide as a restoration tool; as in many of our ecosystems, without

herbicide control of invasive plants would probably not have been possible. Having a place where people can see how targeted and minimal herbicide application can be, and the many ways that it can support the health and resilience of ecosystems, has been an asset to our ability to address invasives across our landscape.

Combined with the incredible work of The Nature Conservancy, US Fish and Wildlife Service and the Vermont Department of Fish and Wildlife in the LHTF's floodplains, these projects constitute a major restoration effort on the LHTF, a model for partnership, innovation and the responsible stewardship of our ecosystems. ♦

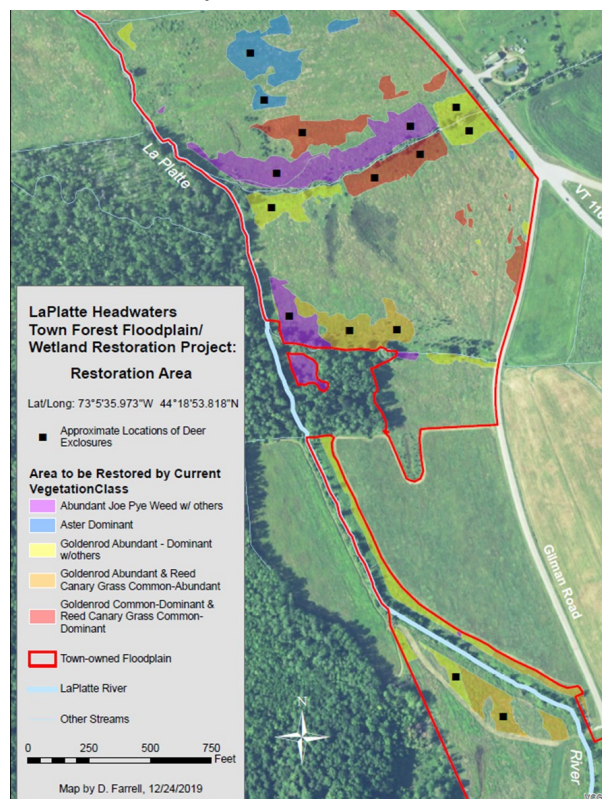
RESTORING WOODS AND WATERS AT THE LAPLATTE HEADWATERS TOWN FOREST: COMPARING PLANTING SUCCESS BY EXISTING VEGETATION TYPE

Gus Goodwin, Senior Conservation Planner, The Nature Conservancy Vermont

The Nature Conservancy is pleased to join a community of engaged citizens, land managers, and scientists who are working to restore ecological function to the forests and floodplains at the LaPlatte Headwaters Town Forest. With funding from DEC and an anonymous donor, TNC is launching a 2,600-stem tree planting project that will help restore 13-acres of abandoned agricultural land to riparian forest and shed insights that can inform riparian restoration at similar sites across Vermont.

Key to the design of the project is vegetation mapping conducted by graduate and undergraduate students at UVM, led by Morgan Southgate (UVM) and Dan Farrell (TNC). This mapping ties recurring assemblies of meadow vegetation to soil conditions, such as moisture, effectively creating a map of microsites within the planting site. Trees and shrubs commonly used in restoration will be planted systematically across these vegetation types and carefully mapped, allowing for follow up monitoring of survival and performance. The results of the monitoring will indicate if restoration by tree planting is more or less effective in some vegetation types than others, and what species of tree or shrub perform best within and across different vegetation types. Ultimately, this information should help land managers choose species and design restoration plans that make more efficient use of scarce resources.

Beyond this primary objective, TNC has also included 14 small-scale deer exclosures in the study design. These exclosures will be helpful in demonstrating the influence of deer herbivory on restoration success or failure. ♦



INTRODUCING PROPAGATE VENTURES

Mandy St. Hilaire, Project Resource Manager, Propagate Ventures

Propagate Ventures makes it easy for investors to fund low-risk agroforestry projects, while helping farmers increase profitability, through their analytics & project development platform. Right now, agroforestry is re-envisioning riparian buffers into landscape-scale buffers.

Our agroforestry platform simplifies the operational know-how, workflow tools, and investments farmers

need to integrate fruit, nut and timber trees with agriculture, in row with existing operations. Propagate's streamlined deployment and underwriting process serves as a due-diligence funnel that quantifies risk and identifies investment potential.

With Propagate Ventures, farmers become more resilient, and investors earn great returns while building the next generation of regenerative farms. ♦



ENHANCING COMMUNICATION AND NETWORKING IN OUR WORKING GROUP

Mandy St. Hilaire, Project Resource Manager, Propagate Ventures & Alison Adams, Watershed Forestry Coordinator, UVM Extension

In 2019, this riparian working group convened for the first time to share resources, provide important information, and give updates on what their organization or department was planning for the upcoming riparian planting season and beyond. Since then, it has become clear that the number of us planting trees and monitoring water quality in riparian zones is increasing every year. There is now a long list of various funders, administrators, planters, planners, monitors, stewards, and the list goes on. To increase communication fluidity through this extensive network, Alison Adams (Watershed Forestry Coordinator, UVM Extension) and Mandy St. Hilaire (Project Resource Manager, Propagate Ventures) are putting together a database of partners in Vermont riparian planting.

Thank you for responding to our initial survey in March, as that is providing the groundwork for this database, which will ultimately live [at this link](#). It will be an ongoing

work in progress, and we will be seeking feedback for improvements in the near future. One piece to make this a success is that it will require annual updates from each partner! It will be a simple survey sent along with the semi-annual newsletter asking to check the database and let us know about any personnel changes in your organization or agency department. This will be a public database; only information already supplied to the public will be used within it. As a public database, this will be available to share, to use for onboarding new employees, and any other way it could prove helpful to furthering riparian plantings.

If anyone has any feedback, ideas, concerns, or thoughts about this database and the process please don't hesitate to reach out to Alison and Mandy. Our how is that will be live on the Watershed Forestry Partnership website within the next month. Until then, happy planting! ♦

STATEWIDE WATER QUALITY EFFORTS ENHANCED THROUGH TREES FOR STREAMS, A NATURAL RESOURCES CONSERVATION-LED PROGRAM

Molly Varner, Communications Coordinator, VT Association of Conservation Districts

Poultney Mettowee plants 7.4 acres of riparian buffer under the signature program

In 2020, Poultney Mettowee Natural Resources Conservation District (PMNRCD) worked to implement a 7.4-acre exclusion fencing, berm removal, and riparian buffer planting project on a farm in Pawlet, Vermont.



The Opportunity

In 2019, Seth and Diane Butler attended an agricultural grant-writing workshop hosted by PMNRCD looking for assistance implementing a riparian buffer and exclusion fencing project on their new farm. The Butlers had recently begun managing a 270-acre farm in Pawlet, Vermont that had been in Diane's family for generations and conserved the property through the Vermont Land Trust.

The Butler's property, now named Deep Roots Farm, consists of hay fields, pastures, and woodlands, and is

located just 3 miles away from the Village of Pawlet. This area of Pawlet is in the Flower Brook Watershed, which is a tributary to the Mettowee River and eventually feeds into Lake Champlain. Through years of gathering water quality sampling data, PMNRCD and partners have identified the Flower Brook Watershed as an area in need of best management practice implementation due to the high nutrient levels found in the brooks there. The Flower Brook watershed is also of high priority due to its vulnerability to climate change and potential for flood damage downstream.

The Project

The project consisted of 6,440 feet of exclusion fencing, encompassing a 7.4-acre buffer planted with 2,085 trees and shrubs, and the work included removing a small berm on the lower stretch of stream, and improving a farm road to reduce erosion draining to the stream at the crossing.

The scope and documented need for the project allowed PMNRCD to coordinate with a variety of partners to complete the different aspects of the project. Implementa-



tion funding was provided through Trees for Streams, a state-wide program funded by an Agency of Natural Resources Buffer Planting grant through the Vermont Association of Conservation Districts, the private foundation PUR Projct, and funding from the US Fish and Wildlife Service.

In the spring of 2020, PMNRCD worked to (cont.)

(cont. from pg. 5)

move the project forward. Forested riparian buffers have many benefits for the health of the landscape; they protect water quality by filtering runoff, increase available wildlife cover, food supply, and connectivity, improve many aspects of aquatic habitat, and reduce erosion and flooding damage by connecting waterways to their natural floodplain. With the exception of apples and blueberries that were included, PMNRCD planted all native trees and shrubs, including types of dogwood, willow, maple, oak, and viburnum species. Many of these plants came from local Vermont plant nurseries such as the Intervale Conservation Nursery in Burlington and the Champlain Valley Native Plant Restoration Nursery in Poultney.

In addition to assisting PMNRCD's planting crew with the buffer, the Butler family also constructed the exclusion fence and removed the small berm. Exclusion fencing has many water quality benefits. In this project, the fencing limits the contact the Butler family's livestock has with the stream and only allows crossing at designated areas where the stream is stable. This conservation practice will help reduce future bank and soil erosion and prevent widespread nutrient runoff.



Learn More

PMNRCD continually works with area farmers and partner organizations to implement projects and practices

that have water quality benefits and will enhance the farming experience from an economic and ecological perspective. Please [contact](#) PMNRCD if you're interested in becoming involved or would like to learn more about our work.

The Natural Resources Conservation Districts' (NRCDS) signature riparian buffer program, Trees for Streams, has expanded since 1999 from a Lamoille County

Conservation District initiative to a key statewide program. Since its inception, the NRCDS-led program has provided technical and financial assistance to develop and plant buffers in targeted watersheds to enhance riparian habitat, improve stream health and floodplain function, and protect water quality. The suite of co-benefits created through the Trees for Streams program is a hallmark of the mission of NRCDS, which are dedicated to the protection of Vermont's treasured landscapes. Through unified support and outreach by NRCDS, the program can be made available to appropriate sites across Vermont. Individuals interested in learning more or working with their local Conservation District on tree plantings in the future, can [contact](#) their local Conservation District. ◆



SPRING TREE SALES

Hosted by Conservation Districts



Pickups available in:

Berlin, Highgate, Middlebury, Montgomery,
Morrisville, Newport, Poultney, Putney,
Rutland, and Williston.

Inventory is low and ordering is closing soon!
Visit vacd.org/treesale for more details

ADDRESSING THE NATIVE TREE STOCK SHORTAGE IN VERMONT

Annalise Carington, Conservation Specialist, USFWS Partners for Fish & Wildlife

It's no secret that sourcing native trees and shrubs has become an increasing challenge for restoration practitioners across the state—and this problem isn't unique to Vermont. A comprehensive [paper](#) published in February 2021 asserts that, to meet just half of projected reforestation opportunities in the Lower 48 United States by 2040, annual nursery production will need to increase by 2.4-fold, totaling an additional 1.8 billion seedlings. An accompanying [report](#) authored by the non-profit American Forests distilled key findings from surveys conducted with over 100 nurseries nationally, detailing the state of America's tree nursery infrastructure, current limitations, and potential strategies for supporting growth that support the entire reforestation pipeline. Some of the key limitations identified for the [Northeast and Midwest regions](#) include labor, market reliability, infrastructure and/or equipment, and land.

These national and regional trends appear to ring true in

Vermont, but to better inform local need and local opportunity, the UVM Watershed Forestry Partnership and the USFWS Partners for Fish and Wildlife Program are teaming up to gather Vermont-specific data on market trends and the current state of our nursery infrastructure. We are starting this process by surveying both restoration practitioners and growers to help clarify constraints in the supply and demand for native trees and shrubs. We intend to follow-up these surveys with a series of stakeholder conversations. Our hope is that more precise data and local engagement will help catalyze partnership, spur innovation, and inform how available resources and funding can best be directed.

We've already received over 20 responses to the survey we developed for restoration partners—a big thanks to all who participated—and we are gearing up to connect with growers later in April. Please reach out to [Annalise Carington](#) or [Alison Adams](#) with questions! ◆

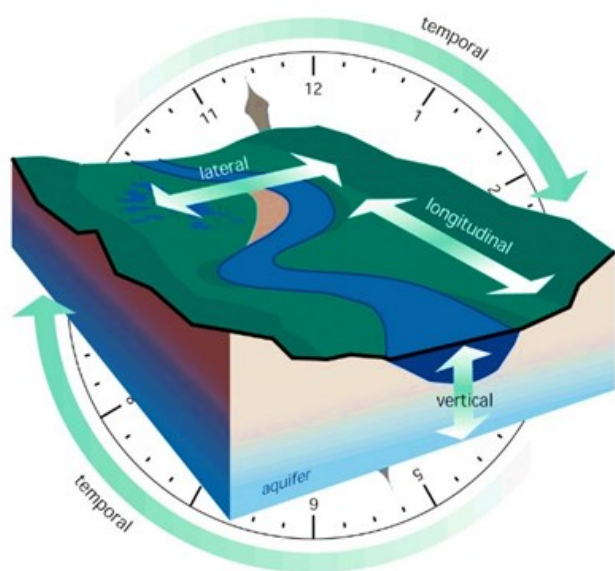
VERMONT'S FUNCTIONING FLOODPLAINS INITIATIVE TO ENHANCE RIPARIAN RESTORATION

Mike Kline, *Fluvial Matters*

The Vermont Department of Environmental Conservation has started a [Functioning Floodplains Initiative \(FFI\)](#) to create tools for planning and tracking the restoration and protection of watersheds in the Lake Champlain Basin. A consulting team, including UVM researchers, is creating mapping and assessment tools with cutting edge science and data applications to prioritize projects and practices for reconnecting rivers and adjacent, naturally functioning riparian areas, wetlands and floodplains. Achieving hydrologically-connected riverscapes is critical to meeting Vermont's goals for the highest water quality, flood resiliency, and ecological integrity.

Riparian restoration practitioners are well versed in selling the benefits of reestablished buffer vegetation. When the FFI tools come on-line (2022), opportunities to broaden participation in projects may increase using FFI generated benefit-cost data for practices restoring the natural hydrologic and geomorphic processes that minimize erosion, enhance watershed storage, and create habitat.

Nearly completed are the FFI map and assessment tools for locating cost-effective opportunities to restore and conserve the four types of hydrologic connectivity essential to natural stream stability and watershed storage. Practices that are being mapped at the reach scale for larger streams, include:



Floodplains Function to:

1. Maintain least-erosive stream forms (bed & banks)
2. Store flood water and reduce of flood peaks
3. Store sediment, nutrient, and organics (carbon)
4. Provide for habitat mosaics & biologic productivity
5. Provide for the movements of fish and wildlife

Lateral and vertical connectivity:

- Restoring adjacent floodplains and wetlands
- Removing lateral constraints to stream meandering
- Restoring natural buffer and floodplain vegetation
- Conserving wetlands and river corridors

Longitudinal and temporal connectivity:

- Removing/replacing obstructing dam and culverts
- Restoring flows and reducing stormwater discharge

This summer and fall, the team will be developing social and economic feasibility factors to further prioritize projects, and a debit-credit system to assess the connectivity gains achieved with project implementation in and along larger streams and their headwaters. When the FFI is in use, the DEC will screen prioritized projects for eligibility and inclusion into their [Watershed Project Database \(WPD\)](#) as candidates for state funding, and users will be able to track projects and report of the overall progress of restoring stream, wetland, and floodplain functions at both the reach and watershed scales. Plans for integrating FFI data into the State's tactical basin planning cycle, in partnership with stakeholders, will ensure that the FFI is maintained as a reliable tool for watershed restoration and public outreach into the future.

The DEC looks forward to engaging riparian restoration practitioners and other watershed stakeholders when outreach materials and training programs become available. For more information contact Gretchen Alexander (gretchen.alexander@vermont.gov) or Mike Kline (fluvialmatters@gmail.com). ♦

REED CANARY GRASS CONTROL AND RIPARIAN BUFFER ESTABLISHMENT USING VARIOUS MANAGEMENT TECHNIQUES

Stever Bartlett, M.S. Student, UVM Rubenstein School

In the Lake Champlain Valley, sites with clay soils and well-established reed canary grass (*Phalaris arundinacea*) stands are common, and have proven to be a challenge for growth success of seedling plantings during riparian forest restoration projects. The impacts of reed canary grass (RCG) on the habitats it invades are numerous. Reed canary grass reduces biological diversity by homogenizing habitat structure, richness, and environmental variability. It alters hydrology by trapping silt and constricting waterways, and limits tree regeneration in riparian forests by shading and crowding out seedlings. Conversely, acre for acre, forests contribute less sediment and nutrient runoff pollution than any other land use. Forested floodplains are highly effective at filtering nutrients and reducing surface runoff as well as providing shade, temperature control, food, and wildlife corridors for many fish and wildlife species. A critical step to promoting and ultimately ensuring widespread adoption of riparian forest restoration efforts is to identify best practices for site preparation and maintenance at locations where RCG is dominant. Planting projects aspire for high percentage survival, and due to the invasive nature of RCG, it can lead to significant cost, time and labor.

To address the opportunity for forest restoration considering the challenge of reed canary grass infestations, the purpose of this project is to assess survival of native tree stems subject to standard vs. herbicide-free management techniques during the establishment and maintenance of riparian forest buffers at sites with clay soils and well-established reed canary grass stands. The research, funded by Lake Champlain Basin Program in conjunction with the Watershed Forestry Partnership,

will attempt to accomplish this by planting adjacent treatment (herbicide-free management techniques) and control (i.e., standard herbicide management techniques) plots of native tree stems at eight Addison County Lake Champlain Basin sites, and assess survival overtime. The sites are located in the Vermont Fish and Wildlife Department's Dead Creek, Lemon Fair, Little Otter Creek, Lower Otter Creek and Whitney/Hospital Creek Wildlife Management Areas.

A common and current standard treatment in the Lake Champlain basin of Vermont is the application of glyphosate as a primary management practice to control RCG. Herbicide-free management techniques have been studied with varying results, including tilling and mowing methods. The herbicide-free management technique in this study incorporates tilling the treatment plot prior to planting, and mowing sites at set intervals. The preparation of the plots was completed in the late summer and early fall of 2020. The planting of 1,440 tree stems will occur in late April across the eight sites. Tree stems range in height from 3-5ft and include species native to Lake Champlain Basin floodplains. Data collection and plot maintenance will happen in the summer and early fall of 2021, with more data collection and maintenance in the summer and fall of 2022. After the leaves have fallen and the data compilation and analysis is wrapped up, a scientific paper will be prepared and the results of the project will be shared with the scientific community and stakeholders, to provide data based information for landowners and practitioners to use when deciding what management methods to use for future planting projects.



Left, an unmanaged site; center, a site following first herbicide application and tilling; right, a site following the second herbicide and tilling.



If you would like to submit a story for a future issue, or subscribe to or unsubscribe from the Watershed Forestry Partnership mailing list, contact Alison Adams at alison.adams@uvm.edu.

For more information about the Watershed Forestry Partnership, please visit [our website!](#)

Thanks to Watershed Forestry Partnership supporters: American Forests, Bruce Lisman, Lake Champlain Sea Grant, Pur Projet, UVM Extension, and Vermont Natural Resources Conservation Service!

